

Application No.: 09/463,565
Amendment dated: November 14, 2003
Reply to Advisory Action: October 31, 2003

MAT-7886US

REMARKS/ARGUMENTS

Amendments

Claims 5 and 6, drawn to an unelected invention, have been cancelled without prejudice to applicants' right to pursue the subject matter of these claims in a divisional application. Claim 1 has also been amended to recite that the electrode active material participates in the charge and discharge reactions of said battery. This amendment is discussed below.

Claim 13 has been amended to more particularly point out and distinctly claim what applicants regard as the invention. If necessary support for this amendment can be found on page 4, line 13, to page 5, line 3.

Support for newly presented claim 14 is found in Figure 1; on page 3, lines 14-25; page 4, lines 1-12; and in original claims 1, 2, and 5. Support for newly presented claim 15 is found in original claims 3 and 4. Support for newly presented claims 16, 18, and 20 is found in original claims 2 and 5. Support for newly presented claims 17 and 21 is found on page 4, lines 14-20. Support for newly presented claims 19 and 22 is found on page 4, lines 29-31. Support for newly presented claim 23 is found on page 4, line 13, to page 5, line 3. Support for newly presented claim 24 is found in original claims 3 and 4. Support for newly presented claim 25 is found on page 4, lines 14-20, and lines 29-31.

It is submitted that no new matter is introduced by these amendments and new claims.

Definition of Claim Terms

Applicants thank the Examiner for highlighting the Office position in the Advisory Action of October 31, 2003. Applicants traverse the Office construction of the following claim terms for reasons given below.

Boehmite Treatment and Oxide Layer Formed by Applying a Boehmite Treatment to the Electrode plate Surface

The Office position is that claim 1 recites an oxide layer. See, Advisory Action of October 31, 2003, paragraph 7 ("hydrated aluminum oxide is not what is claimed. Rather 'oxide' is what is claimed."). Applicants' position is that claim 1 must be construed to recite "hydrated aluminum oxide."

Claim 1 recites an "oxide layer being formed by applying a boehmite treatment to the electrode plate surface". As shown by two of the very references on which the Office relies, a boehmite treatment produces "a layer of hydrated aluminum oxide."

One of such methods is known as so-called boehmite treatment by which aluminum or aluminum alloy is brought into contact with hot water or steam containing or not containing ammonia or amines so as to form on the surface of aluminum or aluminum alloy an aluminum oxide layer predominantly consisting of $Al_2O_3 \cdot nH_2O$ wherein n is usually an integer of 1 to 3.

Nikaido, U.S. Patent 4,105,511, column 1, lines 20-27 (emphasis added).

As the hydrophilic film, a boehmite film by a boehmite treatment, an anodic oxide film by anodizing, a chromate film or zinc phosphate film by chemical conversion and the like are used. The boehmite film is obtained by subjecting the roughened conductor surface to weak alkali boiling water or steam of which pH is adjusted to 8.5 to 10 by adding a small amount of alkali substance such as ammonia, triethanol amine and diethylamine. Alternatively, the conductor surface is subjected to deionized boiling water or steam. The boehmite film thus obtained is composed of hydroxides representative of $(AlO \cdot OH)_2$ or $Al_2O_3 \cdot H_2O$ and has a thickness of 0.05 to 2 μ . The film is non-porous and has a smooth surface, and exhibits an excellent hydrophilic nature.

Saruwatari, U.S. Patent 4,759,805, column 3, lines 8-19 (emphasis added).

Claim 1 recites an "oxide layer being formed by applying a boehmite treatment to the electrode plate surface". Only if the "being formed by applying a boehmite treatment to the electrode plate surface" limitation is ignored can claim 1 be construed to recite "aluminum oxide" instead of "hydrated aluminum oxide."

This is legal error. The Court of Appeals for the Federal Circuit has stressed that claim limitations may not be ignored. "It is elementary patent law that all limitations are material." Glaxo, Inc. v. Novopharm, Ltd., 42 USPQ2d 1257, 1261 (Fed. Cir. 1997).

For these reasons, applicants traverse the Office position and assert that claim 1 must be construed to recite "hydrated aluminum oxide."

Electrode Active Material

The Office position is that the term "electrode active material" can have a plethora of meanings, *including an aluminum oxide layer*, which is disclosed *inter alia* in the abstract of Nikaido. . . . Paper 13, page 2, lines 16-18 (emphasis original). Consequently, the Office has considered organic electrolytes (Carlson), an aluminum oxide layer (Nikaido), and wetting agents (Saruwatari) to be electrode active materials.

Applicants' position is that "electrode active material" has a recognized meaning in the art: "In a battery, the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions." This definition is the definition of "active material" given in the McGraw-Hill Dictionary of Scientific and Technical Terms, 5th ed., McGraw-Hill, New York, 1994, p. 29, definition 4. Addition of the adjective "electrode" to "active material" merely emphasizes that it is the active material for a battery.

The Office asks why is Applicants' definition of "electrode active layer" (sic) superior to the definition provided by the Office, and taken from the Nikaido patent.

Applicants note that the claim term in question is "electrode active material" not "electrode active layer" as mentioned by the Office. The Office refers to the Abstract of Nikaido, but applicants are uncertain how or where the term "electrode

active material" is defined in this disclosure. Applicants also note that Nikaido refers to the surface of aluminum or an aluminum alloy as being "chemically active and subject to corrosion by acid and alkalis." (col. 1, lines 15-17) (emphasis added).

The answer to the question as to why applicants' definition is "superior" can be found in the opinions of the Court of Appeals for the Federal Circuit:

It has been long recognized in our precedent and in the precedent of our predecessor court, the Court of Customs and Patent Appeals, that ictionaries, encyclopedias and treatises are particularly useful resources to assist the court in determining the ordinary and customary meanings of claim terms. See *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325, 63 USPQ2d 1374, 1380 (Fed. Cir. 2002) ("The ordinary meaning of a claim term may be determined by reviewing a variety of sources, including . . . dictionaries and treatises . . ." (internal citations omitted)); *CCS Fitness*, 288 F.3d at 1366, 62 USPQ2d at 1662 ("[O]ur precedents show that dictionary definitions may establish a claim term's ordinary meaning."); *Optical Disk Corp. v. Del Mar Avionics*, 208 F.3d 1324, 1334-35, 54 USPQ2d 1289, 1295 (Fed. Cir. 2000) ("For such ordinary meaning, we turn to the dictionary definition of the term."); *Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1581, 36 USPQ2d 1162, 1166 (Fed. Cir. 1995) ("[W]e see no error in the district court's use of dictionary definitions to ascertain the ordinary meaning of the relevant claim limitation."); *In re Ripper*, 171 F.2d 297, 299, 80 USPQ 96, 98 (C.C.P.A. 1948) ("[I]t is clear that in ascertaining the meaning of [the claim term] as it appears herein, reference properly may be made to the ordinary dictionaries.").

Texas Digital Systems Inc v. Telegenix Inc., 64 USPQ2d 1812, 1818 (Fed. Cir. 2002) (emphasis added).

The term "electrode active material" has a clear meaning in the art. It refers to the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions. This definition does not include electrolytes or wetting agents.

Amendment f Claim 1

However, in order to expedite prosecution, the definition of "electrode active material" has been incorporated into claim 1. This amendment was specifically suggested by the Office. Advisory action, paragraph 3. The term "electrode active material" has a recognized meaning in the art, as evidenced by the McGraw-Hill Dictionary of Scientific and Technical Terms, 5th ed., McGraw-Hill, New York, 1994, p. 29, definition 4. Further, the electrode active materials disclosed by applicants (LiCoO₂, page 4, line 16, and graphite particles, page 4, line 30) satisfy this definition. Thus, no new matter is introduced by this amendment.

Formation of Aluminum Oxide

The Office has asserted, without support, that "aluminum inherently forms an oxide layer." Paper 13, page 4, lines 1-2. In response, applicants' pointed out that the Office had neither asserted nor provided any evidence that a layer hydrated aluminum oxide forms on an aluminum surface under ambient conditions. Because, as shown above, the claims must be construed to recite "hydrated aluminum oxide," the relevant inquiry is whether hydrated aluminum oxide, not aluminum oxide, is formed under ambient conditions. Further, claims 3 and 4 each recite a thickness range for the oxide layer, and the Office had neither asserted nor provided any evidence that the thickness any layer of aluminum oxide that might form under ambient conditions falls within the thickness range recited by these claims.

The Office was respectfully requested to provide such evidence, or it would be concluded that none exists. The Office responded as follows:

Applicants' are always free to draw conclusions. Facts are not diminished or enhanced by drawing conclusions. The Examiner relies on the prosecution history, including all the references, and the facts which are therein.

Advisory action, paragraph 8.

A general reference to "the prosecution history, including all the references, and the facts which are therein" is not evidence. See, 37 CFR 1.104(c)(2) (particular

part of reference relied upon must be designated as nearly as practicable); *see also, In re Lee*, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002) (agency must develop an evidentiary basis for its findings).

Rejection under 35 USC § 102(e)

Claims 1-5 and 9-10 were rejected under 35 U.S.C. §102(e) as anticipated by Carlson, U.S. Patent 6,153,337 ("Carlson"). This rejection is respectfully traversed.

As previously discussed, Carlson discloses "coating onto a substrate a liquid mixture comprising a boehmite sol and then drying the coating to form the microporous pseudo-boehmite layer with binder present. . . ." Carlson, column 4, lines 19-21 (emphasis added). "In a most preferred embodiment, the substrate comprises a cathode coating layer on at least one outermost surface and the liquid mixture comprising the boehmite sol is coated onto the cathode coating layer." Carlson, column 4, lines 29-32.

Claim 1 and claims 2-5, 9, and 13, dependent thereon

Claim 1 recites a structure that comprises in order: 1) an electrode plate for a battery; 2) a surface on the electrode plate having thereon an oxide layer formed by boehmite treatment; and 3) a layer of electrode active material on the oxide layer. The Office asserts that Carlson discloses this structure. This rejection is respectfully traversed.

In support of this rejection and/or the other rejections, the Office has made the following assertions.

- 1) *The boehmite layer of Carlson is equivalent to applicants' oxide layer formed by boehmite treatment.*

The Office position is that "Carson discloses . . . applying a boehmite treatment to the electrode plate (coating with boehmite) Paper 13, page 4, lines 7-12, see also page 8, lines 13-15. The Office also asserts that, "In a larger sense," it is not clear "exactly what the 'boehmite treatment' constitutes." In short, the Office position is that the term "boehmite treatment" is unclear. Thus, Carlson's process of coating

with boehmite constitutes a "boehmite treatment" within the scope of applicants' claims. This position is respectfully traversed.

Applicants' position is that, as shown by the passages cited above from two of the very references on which Office relies, the term "boehmite treatment" has a recognized meaning in the art, a meaning that does not include Carlson's coating process. Carlson's boehmite layer is neither an oxide layer formed by boehmite treatment nor does it have the same composition and structure as an oxide layer formed by a boehmite treatment. Carlson's layer is microporous. Carlson, column 4, lines 19-21 A boehmite treatment forms a layer that is "non-porous and has a smooth surface, and exhibits an excellent hydrophilic nature." Saruwatari, column 3, lines 8-19.

Carlson does not disclose a "boehmite treatment." For this reason, the rejection of claim 1 as anticipated by Carlson should be withdrawn.

2) *The electrolyte of Carlson is equivalent to applicants' layer of electrode active material.*

This has been discussed in detail above. A electrolyte is not an "electrode active material." Further, claim 1 has been amended to recite that the electrode active material participates in the charge and discharge reactions of said battery. Therefore, the electrolyte of Carlson is not equivalent to applicants' layer of electrode active material. For this additional reason, the rejection of claim 1 as anticipated by Carlson should be withdrawn.

Conclusion

For each of these reasons the rejection of claim 1 as anticipated by Carlson should be withdrawn. Further the rejection of claims 2-5, 9, and 13, dependent thereon, should be withdrawn.

Claim 10

Claim 10 is a method claim that recites a process for producing an electrode plate. The second step is "forming an oxide layer on the electrode plate by applying a boehmite treatment to the electrode plate." As discussed above, the coating process

of Carlson is not a boehmite treatment as that term is understood by the art. For this reason the rejection of claim 10 as anticipated by Carlson should be withdrawn.

First Rejection under 35 USC 102(b)

Claims 1 and 3 were rejected under 35 U.S.C. §102(b) as anticipated by Nikaido. This rejection is respectfully traversed.

The Office position is that Nikaido discloses "subjecting an aluminum or aluminum alloy to a boehmite treatment, followed by electrolysis using the resulting aluminum or aluminum alloy as the electrode . . . and thereby forming a new layer. See e.g. column 1, 64 *et seq.*" Paper 13, page 7, lines 16-19. The Office position is also that the term "electrode active material" can have a plethora of meanings, *including an aluminum oxide layer*, which is disclosed *inter alia* in the abstract of Nikaido. . . . Paper 13, page 2, lines 16-18 (emphasis original).

As applicants' understand the Office position as stated in passages cited above, the aluminum oxide layer disclosed in the Abstract of Nikaido corresponds to the "electrode active material" recited in applicants' claim 1. This assertion is respectfully traversed.

The Office is asserting that Nikaido's aluminum oxide layer corresponds to two elements of applicants' claim 1: the oxide layer formed by boehmite treatment and the layer of electrode active material. Defining "electrode active material" as broadly as asserted by the Office and allowing the oxide layer to correspond to two elements of applicants' claim 1 would allow any boehmite treated aluminum to anticipate applicants' claim 1.

As discussed above, an electrode active material is "the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions." Further, claim 1 has been amended to recite this limitation.

Nikaido does not disclose a layer of an electrode active material on an oxide layer formed by a boehmite treatment. The rejection of claim 1 as anticipated by Nikaido should be withdrawn.

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Second Rejection under 35 USC 102(b)

Claim 1 was rejected under 35 U.S.C. §102(b) as anticipated by Saruwatari. This rejection is respectfully traversed.

The Office position is that Saruwatari discloses an electrode (aluminum conductor) having formed thereon an oxide layer (boehmite film), the oxide layer being formed by applying a boehmite treatment to the electrode plate surface and layer of an electrode active material is on the oxide layer (wetting agent), wherein the oxide layer is non-porous (non-porous boehmite layer). Paper 13, line 20, to page 14, line 1. Applicants' traverse the Office assertion that a wetting agent is an " electrode active material."

As discussed above, an electrode active material is "the chemically reactive material in either of the electrodes that participates in the charge and discharge reactions." Further, claim 1 has been amended to recite this limitation. Saruwatari's wetting agents are not materials that participate in charge and discharge reactions in a battery. Saruwatari's wetting agents are conventional anionic surfactants such as alkylsulfates and alkyl benzene sulfonates, conventional nonionic surfactants such as polyoxyethylene alkyl ethers and polyoxyethylene alkyl phenol ethers, and hydrophilic polymers such as polyvinyl alcohol and cellulose. See, Saruwatari, column 4, lines 3-20.

Saruwatari does not disclose a layer of an electrode active material on an oxide layer formed by a boehmite treatment. The rejection of claim 1 as anticipated by Saruwatari should be withdrawn.

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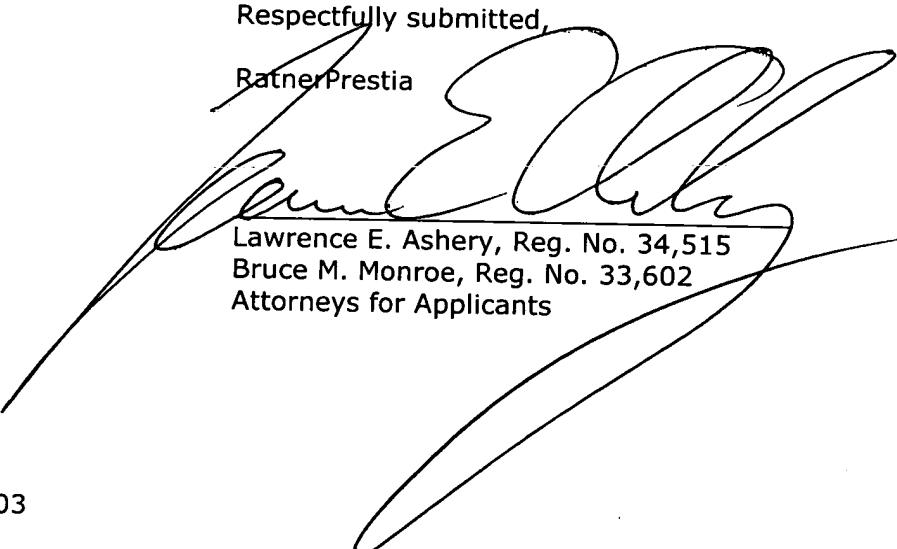
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Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

Respectfully submitted,

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